

REMARKS

Applicants' invention relates to a tufted good comprising a greige good comprising fibers tufted into a primary backing and having a face surface and a back surface, a precoat having a face surface and a back surface with the face surface of the precoat being adhered to the back surface of the greige good, and a flexible film laminated to the back surface of the precoat after being treated via corona discharge at a power density of 0.2 to 20 Ws/cm². The present invention also relates to a process for producing a tufted good. This process comprises treating a flexible film with corona-discharge at the specified power density, contacting the treated flexible film to the back surface of the uncured or partially cured precoated greige good, and curing the resultant article.

The above amendment to Claim 25 serves to correct a typographical error. The correct range of 0.2 to 20 Ws/cm² has been inserted by this amendment. Support for this can be found on page 4, lines 25-29 of the present specification.

In response to a restriction requirement under 35 U.S.C. 121, Applicants were required to elect to prosecute either the claims of Group I (Claims 1-14) or the claims of Group II (Claims 15-30). Group I is directed to tufted goods, and Group II is directed to a process for producing a tufted good. Applicants do hereby confirm their provisional election to prosecute the invention of Group II (Claims 15-30) at this time.

Claim 25 was objected to for formalities. In particular, the Examiner indicated that the claimed range of 0.1 to 20 did not appear in the specification, and thus, lacked antecedent basis. This objection is moot in view of the preceding amendment to Claim 25 whereby "0.1" has been changed to "0.2".

Claims 15-30 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as their invention. The Examiner indicated that it was unclear whether, in Claim 15, the term "greige good" includes a tufted layer, where the precoat is in relation to the greige good and flexible film and the flexible film in relation to the precoat and the greige good. With respect to Claim 16, the Examiner indicated that this should be amended to include "to the back surface of the precoat". The term "greige good" in Claim 25 was also considered indefinite by the Examiner as it is unclear whether this includes a tufted good. Applicants respectfully disagree.

It is respectfully submitted that the present claim language is definite as required by 35 U.S.C. 112, second paragraph. The requirements of the second paragraph of 35 U.S.C. 112 were addressed by the court in *In re Moore and Janoski*, 169 USPQ 236 (CCPA, 1971). The issue at hand is

"whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. It is here where the definiteness of the language employed must be analyzed - not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art."

In view of this standard, Applicants respectfully submit that it appears that the Examiner has not considered either the relevant art or the present specification, and how one skilled in the art would interpret these. The present specification at page 5, line 4 through page 6, line 6 provides a definition of the term "tufted goods", and also describes the greige good and two different types of reactive polyurethane systems which are typically applied to the primary backing side of the greige good.

More specifically, the term tufted good as used in the present invention refers to carpets and artificial turf products. (See page 5, lines 4-5 of the present specification.) These tufted goods are prepared in the conventional manner.

Applicants respectfully submit that the term "greige good" is a commonly used term, which is known and understood by those of ordinary skill in the art in the field of carpet backing and artificial turf. A griege good is constructed by tufting yarns into a primary backing. The primary backing may be woven or non-woven, and is typically prepared from jute, polypropylene, etc. The primary backing side (i.e. the back side) of the greige good is then typically contacted with a reactive polyurethane, which is usually mechanically frothed. (See page 5, lines 6-10.) This reactive polyurethane may be a precoat formulation or a foam cushion formulation. (See page 5, line 23 through page 6, line 6.)

From this portion of the specification, it is evident that the term "greige good" is clearly referring to the primary woven or non-woven backing into which the yarn has been tufted. Thus, a "greige good" includes a layer of yarn tufted into the primary backing. Applicants respectfully submit that this is readily apparent to one of ordinary skill in the art from the present specification. Also, the skilled artisan knows and

understands what is meant by Applicants' use of the term "greige good" as this is a commonly used and well known term in the area of carpet backing. One of ordinary skill in the art, upon reading Applicants' specification, would know and understand with a reasonable degree of certainty that the term "greige good" as set forth in the present claims encompasses a layer of yarn tufted into a woven or non-woven primary backing.

The Examiner's attention is also directed to U.S. Patent 6,299,715 (Langsdorf et al) at column 1, lines 11-22, 32-35, 40-46 and 50-64. Greige goods are described therein, as well as different types of precoats, adhesives, secondary backings, etc. and the construction of different types of carpeted goods. It is respectfully submitted that the '715 patent issued on October 9, 2001, and the present application was filed on December 18, 2001. Thus, the '715 patent was publically available at the time Applicants filed the present application.

The Langsdorf et al reference has been relied upon in both of the rejections under 35 U.S.C. 103(a) as set forth in the Office Action dated November 26, 2003. It is evident from this that the Examiner believe the Langsdorf et al reference is a relevant reference and "obviously" relates to the same field of invention.

Applicants respectfully submit that their use of the term "greige good" in the present application is no different than the use of this term in the Langsdorf et al reference. This patent provides adequate evidence that the term "greige good" is a known and accepted term commonly used in the field of carpet products and processes.

In addition, with respect to the comment that it is unclear in Claim 15 where the precoat is in relation to the greige good and the flexible film, Applicants respectfully disagree. In Claim 15, (B) reads "contacting the treated flexible film with the uncured or partially cured back surface of a precoated greige good". From the phrase "precoated greige good", it is apparent to one of ordinary skill in the art that the greige good has been precoated with reactive polyurethane by contacting the primary backing side of the greige good with the reactive polyurethane, as described at page 5, lines 9-15, which is a precoat formulation, as described at page 5, lines 24-30. In other words, the precoat is applied to the side of greige good which primarily shows the primary backing. One of ordinary skill in the art would typically consider this the back side (or bottom) of the greige good. The front side (or top) of

the greige good is the side with all of the loose yarns. As described at page 5, lines 25-30, the main purpose of the precoat is as an adhesive to lock the yarn into place to provide tuftbind strength and penetrate the fiber bundles and prevent pilling and fuzzing.

It is also expressly stated in (B) of Claim 15, that the treated flexible film is applied to the back surface of the precoated greige good. In other words, after the precoat is applied to the bottom of the greige good, the treated flexible film is applied to the exposed surface or the back surface of the precoat. At the time this contact occurs, the precoat may be either partially cured or uncured.

Applicants respectfully submit that the express language of Claim 15 clearly provides sufficient information to one of ordinary skill in the art to know and understand (1) what a greige good is and that it comprises a tufted layer, (2) that the precoat is applied to the back side or bottom of the greige good such that it essentially locks the loops of tufted yarn into the primary backing, and (3) that the treated flexible film is contacted to the back side of the precoat, i.e. the exposed side of the precoat. This is also clearly described in the specification at page 4, lines 3-9; page 5, lines 4-30; and on page 8, lines 8-15. One of ordinary skill in the art of carpet backing clearly knows and understands, with a reasonable degree of certainty, what subject matter is encompassed by the present claim language. This position is supported by the present specification as well as by U.S. Patent 6,299,715. The so-called "layers" (in order of top to bottom) of this tufted good are (1) a greige good, (2) a precoat, and (3) a flexible film. Therefore, Applicants respectfully submit that Claim 15 is definite as required by the second paragraph of 35 U.S.C. 112.

With respect to Claim 16, and the Examiner's statement that it should be amended to read "to the back surface of the precoat", Applicants respectfully disagree. Claim 16 is directed to a process for producing a tufted good which comprises a greige good consisting of tufted yarns and a primary backing, a precoat has been applied to the bottom side of the greige good (i.e. the primary backing side), a foam layer is adhered back side of the precoat, and the corona-discharge treated flexible film is contacted with the back surface of the foam layer, with the

foam layer being either uncured or partially cured. The basic layers (in order of top to bottom) of this tufted good are (1) a greige good, (2) a precoat, (3) a foam layer, and (4) a flexible film.

Applicants respectfully submit that to amend Claim 16 as suggested would change the scope of the claim to another embodiment aside from that which Applicants intended to claim! The suggested amendment would require the flexible film to be attached to the precoat instead of to the foam layer. Accordingly, such an amendment is not appropriate.

Claim 16 is quite clear in that it states that the "corona-discharge treated flexible film is contacted to the uncured or partially cured back surface of a foam layer which is adhered to the back surface of a precoated greige good". It is respectfully submitted that Claim 16 is definite as written.

The Examiners' attention is directed to Claim 17. Claim 17 requires the tufted good to comprise the basic layers (in top to bottom order) of (1) a greige good, (2) a precoat, (3) a corona-discharge treated flexible film and (4) a foam layer. In Claim 17, the corona-discharge treated flexible film is in between the precoated greige good and the foam layer. By comparison, Claim 16 has the foam layer between the precoated greige good and the corona-discharge treated flexible foam.

With respect to the comment that Claim 25 is indefinite because it is unclear if the term "greige good" includes a tufted layer, Applicants respectfully disagree. The preceding comments with respect to Claim 15 apply here with respect to Claim 25. The present specification provides an adequate description and definition of the term greige good such that even one who is not of ordinary skill in the art knows and understands that a greige good comprises a primary backing with yarns tufted through the backing. (See page 5, lines 4-10.) Applicants respectfully submit that the language of Claim 25 is definite as required by the second paragraph of 35 U.S.C. 112.

In view of the above, it is respectfully submitted that the present claim language is definite. One of ordinary skill in the art upon reading the claim language and Applicants' specification, knows and understands what subject matter is encompassed by the present claims with a reasonable degree of certainty. The rejection of Claims 15-30 under 35 U.S.C. 112, second paragraph is improper.

Claims 15-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Irwin reference (U.S. Patent 5,612,113) in view of the Langsdorf et al reference (U.S. Patent 6,299,715).

U.S. Patent 5,612,113 is directed to a carpet with a fluid barrier. This reference is discussed in the present specification on page 2, lines 12-24. As described therein, this reference describes applying a film of liquid impervious material to either the primary backing or to the secondary backing of a carpet to achieve a fluid barrier to prevent liquids which are spilled from penetrating through onto the sub-surface below the carpet. If a foam layer is present instead of the secondary backing, the film is applied to the inner surface of the primary backing and then the foam is applied. (See column 2, lines 38-46 of the '113 patent.) It is broadly disclosed in this reference that the fluid barrier is applied with adhesives other than hot melt adhesives, and include polyurethane adhesives. It also discloses that corona-treatment of the film on one side may be sufficient to make it bondable to the backing. (See column 4, lines 15-20 and lines 36-38.)

Urethane adhesive laminated carpeting is described by the Langsdorf et al reference (U.S. Patent 6,299,715). These polyurethane carpet laminating systems use only one polyurethane adhesive puddle. The resultant carpet laminates exhibit acceptable tuft bind and initial secondary backing adhesion, while having lower weight and a lower cost due to the decrease in amount of polyurethane used.

Applicants respectfully submit that the presently claimed invention is not rendered obvious by this combination of references.

The presently claimed process for producing a tufted good comprises (A) treating a flexible film with corona-discharge at the specified power density, (B) contacting the film with the uncured or partially cured back surface of a precoated greige good, and (C) curing the resultant article. As discussed herein above, the greige good (i.e. a primary backing with tufted yarns) is precoated with a (preferably) polyurethane precoat formulation. After treating the flexible film with corona discharge at the specified power intensity, the film is contacted with the precoat, and the resultant article cured.

Applicants respectfully submit that the presently claimed process results in tufted goods which exhibit improved dimensional stability, even without the use of secondary backing. In fact, resultant cured articles exhibit delamination strength which exceeds that of conventional tufted goods. (See page 2, line 25 through page 3, line 7).

The Irwin et al reference broadly discloses adding a film as a barrier layer to carpet products. These carpets may comprise a primary backing with tufted yarn, a precoat, a conventional secondary backing and a film of an impervious material; or a primary backing with tufted yarn, a precoat, and a film of an impervious material; or a primary backing with tufted yarn, a precoat, a film of an impervious material and a foam layer. (See column 2, lines 38-46.) Suitable films comprise polyethylene, polypropylene, polyurethane polyester, polyvinylchloride (PVC), etc. and combinations thereof, with the thickness of the films varying from 1 to 5 mils, with 1.5 mils being preferred (column 2, lines 46-56). Generally, the film is applied between the primary backing before the secondary backing, or to the back side of the secondary backing. A hot melt adhesive may be used to secure the film to the primary backing or to the secondary backing (column 3, lines 4-20).

When a foam cushion is applied to the carpet instead of a conventional secondary backing, the fluid barrier (film) is between the foam cushion and the primary backing. In such situations, it is preferred to use a film comprising a non-woven or woven fabric on both sides for maximum bond. In this respect, it is broadly disclosed that corona-treatment of one side of the film may be sufficient to be bondable to the backing (column 4, lines 35-38).

It is well known when using latex, polyurethane and other types of precoat and foams, that these must be cured after they are applied. Depending on the construction of the carpet product and the specific layers involved, the precoat and/or foam may be cured by heat including hot air (moist or dry), microwave energy, RF energy, electron beam, UV (ultra-violet) laser beam, infrared heat, etc. These types of heat sources for curing are disclosed in the Langsdorf et al reference at column 4, lines 36-46).

Applicants respectfully submit that, at best, the Irwin et al reference broadly suggests corona-discharge treatment of films in processes of making carpets. This reference does not, however, contain any working examples. Thus, there is no evidence that any of the films disclosed in the Irwin et al reference were treated by mean of corona-discharge.

As set forth in the examples of the present application, a foam cushion formulation was applied to a treated film and a precoat formulation was applied to a treated film, cured and tested for delamination strength. (See page 9, line 10 through page 13, line 8). As in Table 2 on page 13, the delamination strengths of the foam cushions/corona-discharge treated films and the precoats/corona-discharge treated films increased substantially. For example, the high density polyethylene film in combination with the foam cushion formulation showed an increase in delamination strength from 0.04 lbs/in to 5.4 lbs/in (135 times higher), and the low density polyethylene film in combination with the precoat formulation showed an increase in delamination strength from 0.3 to > 11.4 lbs/in (38 times higher). In fact, in this film/precoat, the sample could not be delaminated without destroying the sample! (See page 13, line 4.) Applicants respectfully submit that this is simply not suggested by the Irwin et al reference.

Sufficient information concerning corona-discharge treatment of films is simply not disclosed by the Irwin et al reference which would lead one of ordinary skill in the art to reasonably expect that the delamination strength of such treated films when combined with a precoat and/or foam cushion would increase considerably. Rather, this reference merely states that it "may be sufficient to be bondable to the backing" (emphasis added). Applicants respectfully submit that this statement simply means that it may or may not work. It is clearly not evident from this that one of ordinary skill in the art would (or could) expect corona-discharge treatment of films being used in the processes as presently claimed to increase the delamination strength as illustrated in the working examples of the present application. This is unobvious to one of ordinary skill in the art.

Accordingly, Applicants respectfully submit that the presently claimed invention is not prima facie obvious to the skilled artisan upon reading the Irwin et al reference and the Langsdorf et al reference. The actual increase in delamination

strength resulting from the presently claimed process is clearly not expected by one of ordinary skill in the art. Applicants therefore submit that this rejection is clearly in error and it is requested that it be withdrawn.

Claims 25-30 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Langsdorf et al reference (U.S. Patent 6,299,715) in view of the Irwin reference (U.S. Patent 5,612,113).

Claims 25-30 of the present invention are directed to a process for producing tufted goods comprising (A) treating a flexible film with corona-discharge at the specified power density, (B) contacting the treated flexible film with the uncured or partially cured back surface of a foam layer which is adhered to a greige good, and (C) curing the article formed in (B). In this embodiment, a foam cushion layer is applied to the back side of the greige good, and the treated flexible film is contacted with this foam cushion layer either before it is cured or after it is partially cured. Then, the entire article is cured.

Applicants respectfully submit that the Langsdorf et al reference is not particularly pertinent to the patentability of the presently claimed invention. This reference, as briefly discussed above, applies a polyurethane adhesive (via a puddle) to the reverse side of the greige good, passes the coated greige good under a doctor blade, contacts the reverse side of the coated greige good with a skip-coated secondary backing, passes the carpeting through a pair of marriage rollers or equivalent devices and into an oven for curing. See column 4, lines 9-29.


The purpose of the flexible film as described in the Irwin et al reference is to act as a barrier against fluids contacting either the foam cushion layer or the subsurface under the carpet. (See column 2, lines 38-42.) There is no suggestion in this reference that the flexible film may add dimensional stability to the carpet product in the absence of a secondary backing.

It is respectfully submitted that the presently claimed invention is not fairly suggested by this combination of references. For the reasons as discussed above with respect to the obviousness rejection of Claims 15-24, Applicants respectfully submit that one of ordinary skill in the art simply would not expect the substantial increases in delamination strength. This is simply not suggested by this combination of references!

The skilled artisan has no insight into the presently claimed invention and the improvement in delamination strength from reading the Langsdorf et al reference with the Irwin et al reference. These do not fairly suggest the invention to one of ordinary skill in the art. Accordingly, Applicants respectfully submit that the present rejection is improper and request that it be withdrawn.

In view of the preceding amendments and remarks, Applicants submit that each of these rejections is in error and request that these be withdrawn. The allowance of Claims 15-30 is respectfully requested.

Respectfully submitted,

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